

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

Claims 1-32. (Cancelled)

Claim 33. (Previously Presented) A process for the production of cis-1,4-polybutadiene having a gel content below 250 ppm, comprising polymerizing 1,3-butadiene in the presence of a catalyst and a polymerization diluent, wherein the polymerization diluent comprises an organic solvent and water particles having a median particle size less than or equal to about 10 μm .

D | Claim 34. (Previously Presented) The process of Claim 33, wherein the water present in said polymerization diluent is present as particles having a median particle size in the range of from about 0.5 μm to about 8 μm .

Claim 35. (Previously Presented) The process of Claim 33, wherein the water present in said polymerization diluent is present as particles having a median particle size in the range of from about 0.5 μm to about 6 μm .

Claim 36. (Previously Presented) The process of Claim 33, wherein the water present in said polymerization diluent is present as particles having a median particle size in the range of from about 1 μm to about 5 μm .

Claim 37. (Previously Presented) The process of Claim 33, wherein the organic solvent of said polymerization diluent is selected from the group consisting of an aliphatic compound, an aromatic compound and mixtures thereof.

Claim 38. (Previously Presented) The process of Claim 37, wherein the organic solvent is selected from the group consisting of a saturated hydrocarbon, an unsaturated hydrocarbon and mixtures thereof.

Claim 39. (Previously Presented) The process of Claim 38, wherein the organic solvent is selected from the group consisting of a C₄-C₁₀ aliphatic hydrocarbon, a C₅-C₁₀ cyclic aliphatic hydrocarbon, a C₆-C₉ aromatic hydrocarbon, a C₂-C₁₀ monoolefinic hydrocarbon and mixtures thereof.

Claim 40. (Previously Presented) The process of Claim 39, wherein the C₄-C₁₀ aliphatic hydrocarbon is selected from the group consisting of butane, pentane, hexane, heptane, octane and mixtures thereof.

Claim 41. (Previously Presented) The process of Claim 39, wherein the C₂-C₁₀ monoolefinic hydrocarbon is selected from the group consisting of butene-1, pentene-1, hexene-1 and mixtures thereof.

Claim 42. (Previously Presented) The process of Claim 39, wherein the C₅-C₁₀ cyclic aliphatic hydrocarbon is selected from the group consisting of unsubstituted cycloalkanes, methyl substituted cycloalkanes, ethyl substituted cycloalkanes and mixtures thereof.

Claim 43. (Previously Presented) The process of Claim 39, wherein the C₅-C₁₀ cyclic aliphatic hydrocarbon is selected from the group consisting of cyclopentane, cyclohexane, cyclooctane and mixtures thereof.

Claim 44. (Previously Presented) The process of Claim 39, wherein the C₆-C₉ aromatic hydrocarbon is selected from the group consisting of benzene, toluene, xylene and mixtures thereof.

Claim 45. (Previously Presented) The process of Claim 33, wherein the organic solvent of said polymerization diluent comprises a mixture of cyclohexane and butene-1.

Claim 46. (Currently Amended) The process of Claim 33, wherein said polymerization diluent additionally comprises a polymerization modifier selected from the group consisting of $\text{C}_2\text{-}\text{C}_{18}$ $\text{C}_3\text{-}\text{C}_{18}$ non-conjugated dienes, $\text{C}_6\text{-}\text{C}_{12}$ cyclic dienes and mixtures thereof.

Claim 47. (Previously Presented) The process of Claim 46, wherein the polymerization modifier is selected from the group consisting of 1,2-butadiene, 1,3-cyclooctadiene, 1,5-cyclooctadiene and mixtures thereof.

Claim 48. (Previously Presented) The process of Claim 33, wherein said catalyst comprises a substantially anhydrous cobalt salt and an organo-aluminium halide compound.

Claim 49. (Previously Presented) The process of Claim 48, wherein the substantially anhydrous cobalt salt comprises a compound corresponding to the formula:



wherein:

A: represents a monovalent anion or a divalent anion;
and
m: represents 1 or 2.

Claim 50. (Previously Presented) The process of Claim 49, wherein the anion is derived from a $\text{C}_6\text{-}\text{C}_{12}$ organic acid.

Claim 51. (Previously Presented) The process of Claim 49, wherein the anion is selected from the group consisting of an acetylacetone, an acetate, a hexanoate, an octoate, an oxalate, a tartrate, a stearate, a sorbate, an adipate and a naphthenate.

Claim 52. (Previously Presented) The process of Claim 48, wherein the substantially anhydrous cobalt salt comprises cobalt octoate.

Claim 53. (Currently Amended) The process of Claim 48, wherein the organo-aluminium-aluminum halide compound comprises a compound corresponding to the general formula:



wherein:

R: represents a C₂-C₁₂ alkyl group;

X: represents a halogen;

and

the sum of p + q equals 3.

Claim 54. (Currently Amended) The process of Claim 48, wherein said organo-aluminium-aluminum halide compound is selected from the group consisting of a dialkyl aluminium-aluminum chloride compound, an alkyl aluminium-aluminum sesquichloride compound and mixtures thereof.

Claim 55. (Previously Presented) The process of Claim 48, wherein the organo-aluminum halide compound is selected from:

(I) a mixture of

(a) an alkyl aluminum chloride selected from the group consisting of diethyl aluminum chloride and ethyl aluminum sesquichloride,

or a mixture of :

(a) and

(b) an organo aluminum compound corresponding to the formula:



wherein:

R: represents a C₈-C₁₂ alkyl group;

and

(II) an alkyl aluminum chloride wherein the alkyl group has from 8 to 12 carbon atoms.

Claim 56. (Currently Amended) The process of Claim 48, wherein the organo aluminiumaluminum halide comprises a mixture of:

(a) an alkyl aluminiumaluminum chloride selected from the group consisting of diethyl aluminiumaluminum chloride and ethyl aluminiumaluminum sesquichloride,

and

(b) an organo aluminiumaluminum compound corresponding to the formula:



wherein:

R: represents a C₈-C₁₂ alkyl group.

Claim 57: (Currently Amended) The process of Claim 55, wherein the organo aluminiumaluminum compound corresponding to the formula R₃Al is present in an amount of from 0 to 1% by weight of the mixture.

Claim 58. (Currently Amended) The process of Claim 55, wherein the organo aluminiumaluminum compound corresponding to the formula R₃Al comprises tri-octyl aluminiumaluminum.

Claim 59. (Currently Amended) The process of Claim 48, wherein the substantially anhydrous cobalt salt comprises cobalt octoate and the organo-aluminiumorgano-aluminum halide compound comprises a mixture of diethyl aluminiumaluminum chloride and tri-octyl aluminiumaluminum.

Claim 60. (Currently Amended) The process of Claim 59, wherein the molar ratio of cobalt octoate to the total of diethyl aluminiumaluminum chloride plus tri-octyl aluminiumaluminum is from about 1:15 to about 1:30.

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Claim 61. (Currently Amended) The process of Claim 59, wherein the molar ratio of chlorine in diethyl aluminiumaluminum chloride to the total aluminiumaluminum in diethyl aluminiumaluminum plus tri-octyl aluminiumaluminum is from about 0.7:1 to about 0.95:1.

Claim 62. (Previously Presented) The process of Claim 33, wherein the water is mixed with the polymerization diluent by a mechanical method.

Claim 63. (Previously Presented) The process of Claim 33, wherein the water is mixed with the polymerization diluent by sonic treatment.

Claim 64. (Previously Presented) The process of Claim 33, wherein the polymerization temperature is in the range of from about 5°C to about 40°C.